IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-44. (Canceled)

45.   (New) A computer-readable medium for storing data for access by an application program being executed on a data processing system, comprising:

a spreadsheet file stored on said computer-readable medium, said spreadsheet file including information resident in a record-based storage medium used by said application program and including:

a property record storing attributes of the spreadsheet file;

at least one cell data record storing cell data from a plurality of spreadsheet file cells; and

at least one grid record storing access data describing the location of spreadsheet file cell data in the cell data record.

46.   (New) The computer-readable medium of claim 45 wherein said attributes include the number of rows and cells in said spreadsheet file.

47.   (New) The computer-readable medium of claim 45 wherein said attributes include the name and version of the spreadsheet file.

48.   (New) The computer-readable medium of claim 45 wherein said attributes include date information of said spreadsheet file.

49.   (New) The computer-readable medium of claim 45 wherein said attributes include default data formatting information.

50.   (New) The computer-readable medium of claim 45 wherein said access data includes the number of columns of said spreadsheet file indexed by said grid record.

51.   (New) The computer-readable medium of claim 50 wherein said access data includes cell IDs of cells in said columns indexed by said grid record.

52.   (New) The computer-readable medium of claim 51 further including a plurality of grid records storing access data, wherein each of said plurality of grid records storing access data indexes a subset of columns of said spreadsheet file.

53.   (New) The computer-readable medium of claim 45 wherein the grid record includes entries for every spreadsheet file cell indexed by the grid record.

54.   (New) The computer-readable medium of claim 53 wherein the grid record entry for an empty spreadsheet file cell is zero.

55.   (New) The computer-readable medium of claim 45 wherein said cell data includes the number of cells stored in said cell data record.

56.   (New) The computer-readable medium of claim 55 wherein said cell data includes data values of a plurality of cells in the spreadsheet file.

57.   (New) The computer-readable medium of claim 56 wherein one cell data record stores data values from at least 64 spreadsheet file cells.

58.   (New) The computer-readable medium of claim 56 further including a plurality of cell data records storing cell data, each of said plurality of cell data records storing cell data of a subset of the cells of said spreadsheet file.

59.   (New) The computer-readable medium of claim 45 wherein the cell data record does not include cell data for empty spreadsheet file cells.

60.   (New) A method in a data processing apparatus for accessing cell data of a spreadsheet file cell in a record-based computer readable-medium, comprising:

determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record;

if the cell data location information is contained in the first grid record, determining the cell data location information from the first grid record;

determining the location of cell data corresponding to the spreadsheet file cell in a cell data record based on the cell data location information; and

extracting the cell data from the cell data record.

61.   (New) The method of claim 60, further comprising:

if the cell data location information is not contained in the first grid record, determining whether the cell data location information is contained in a second grid record.

62.   (New) The method of claim 60, further comprising:

determining from a property record property information of the spreadsheet file.

63.   (New) The method of claim 60, wherein determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record includes comparing a column number of the spreadsheet file cell to a column value range of the first grid record.

64.   (New) The method of claim 61, wherein determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record includes comparing a column number of the spreadsheet file cell to a column value range of the second grid record.

65.   (New) The method of claim 60, wherein the cell data location information indicates the location of cell data in the cell data record.

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66.   (New) The method of claim 65, wherein the cell data location information is a 16 bit matrix.

67.   (New) The method of claim 66, wherein the first 10 bits of the 16 bit matrix indicate the cell data record containing the cell data, and the last 6 bits of the 16 bit matrix indicated the location of the cell data within the cell data record.

68.   (New) The method of claim 65, where the cell data location information indicates a value of zero if the spreadsheet file cell is empty.

69.   (New) The method of claim 60, wherein the data processing apparatus is a personal digital assistant.

70.   (New) A computer-readable medium having stored thereon computer-executable instructions for causing a computer to execute a method for accessing cell data of a spreadsheet file cell in a record-based memory, the method comprising the steps of:

        determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record;

        if the cell data location information is contained in the first grid record, determining the cell data location information from the first grid record;

        determining the location of cell data corresponding to the spreadsheet file cell in a cell data record based on the cell data location information; and

        extracting the cell data from the cell data record.

71.   (New) The computer-readable medium of claim 70, further comprising the step of:

        if the cell data location information is not contained in the first grid record, determining whether the cell data location information is contained in a second grid record.

72.   (New) The computer-readable medium of claim 70, further comprising the step of:

determining from a property record property information of the spreadsheet file.

73.   (New) The computer-readable medium of claim 70, wherein determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record includes comparing a column number of the spreadsheet file cell to a column value range of the first grid record.

74.   (New) The computer-readable medium of claim 71, wherein determining whether cell data location information for a selected spreadsheet file cell is contained in a first grid record includes comparing a column number of the spreadsheet file cell to a column value range of the second grid record.

75.   (New) The computer-readable medium of claim 70, wherein the cell data location information indicates the location of cell data in the cell data record.

76.   (New) The computer-readable medium of claim 75, wherein the cell data location information is a 16 bit matrix.

77.   (New) The computer-readable medium of claim 76, wherein the first 10 bits of the 16 bit matrix indicate the cell data record containing the cell data, and the last 6 bits of the 16 bit matrix indicated the location of the cell data within the cell data record.

78.   (New) The computer-readable medium of claim 75, where the cell data location information indicates a value of zero if the spreadsheet file cell is empty.

79.   (New) The computer-readable medium of claim 70, wherein the computer-readable medium is contained in a personal digital assistant.